CLAIMS

1.   A bias controlled amplifier comprising:

one or more amplifier stages coupled together and configured to receive and amplify an input signal to provide an output signal; and

a control unit operatively coupled to the one or more amplifier stages and configured to detect a level of the output signal and, based on the detected output signal level, provide at least one bias control signal for adjusting a bias of at least one amplifier stage.

2.   The bias controlled amplifier of claim 1, wherein each bias control signal adjusts a bias current of an associated amplifier stage.

3.   The bias controlled amplifier of claim 1, wherein the control unit includes

a power detector configured to detect the output signal level and provide a detected signal indicative of the detected output signal level,

a conditioning unit coupled to the power detector and configured to receive and condition the detected signal to provide at least one conditioned signal, and

a bias control generator coupled to the conditioning unit and configured to receive the at least one conditioned signal and provide the at least one bias control signal.

4.   The bias controlled amplifier of claim 3, wherein the conditioning unit is configured to provide a first transfer characteristic selected to provide a desired overall transfer characteristic for bias adjustment of the at least one amplifier stage.

5.   The bias controlled amplifier of claim 4, wherein the first transfer characteristic approximates a logarithmic function.

6.   The bias controlled amplifier of claim 4, wherein at least a portion of the conditioning unit is implemented with digital circuitry.

7.   The bias controlled amplifier of claim 6, wherein the first transfer characteristic is implemented with a look-up table.

8.   The bias controlled amplifier of claim 3, wherein the control unit further includes:

a lowpass filter configured to receive and filter the detected signal to provide a filtered signal, and

wherein the conditioning unit is configured to receive and condition the filtered signal.

9.   The bias controlled amplifier of claim 8, wherein the lowpass filter is configured to filter an envelop in the detected signal.

10.   The bias controlled amplifier of claim 3, wherein the power detector is configured to detect a power level of the output signal.

11.   The bias controlled amplifier of claim 1, further comprising:

a coupler operatively coupled to an output stage of the one or more amplifier stages and configured to couple a portion of the output signal to the control unit.

12.   The bias controlled amplifier of claim 1, wherein the control unit is configured to provide analog-like adjustment of the at least one bias control signal.

13.   The bias controlled amplifier of claim 1, wherein the control unit is configured to continually detect the output signal level and update the at least one bias control signal.

14.   The bias controlled amplifier of claim 1, wherein each bias control signal adjusts the bias of an associated amplifier stage to achieve a particular level of linearity.

15.   The bias controlled amplifier of claim 14, wherein each bias control signal further adjusts the bias of the associated amplifier stage to reduce power consumption.

16.   The bias controlled amplifier of claim 1, wherein each bias control signal adjusts the bias of an associated amplifier stage in a manner to reduce phase discontinuity in the output signal.

17.   The bias controlled amplifier of claim 1, wherein each of the at least one amplifier stage is adjusted based on a respective transfer function of bias versus detected output signal level.

18.   The bias controlled amplifier of claim 1, wherein each bias control signal is limited to within a range of values.

19.   The bias controlled amplifier of claim 1, wherein each bias control signal has a minimum value.

20.   The bias controlled amplifier of claim 1, wherein the one or more amplifier stages are coupled in series.

21.   The bias controlled amplifier of claim 1, wherein the input signal is a CDMA modulated signal.

22.   A bias controlled power amplifier comprising:

one or more amplifier stages coupled in series and configured to receive and amplify an input signal to provide an output signal;

a coupler operatively coupled to an output stage of the one or more amplifier stages and configured to couple a portion of the output signal;

a power detector coupled to the coupler and configured to detect a level of the output signal based on the coupled portion and provide a detected signal indicative of the detected output signal level;

a conditioning unit coupled to the power detector and configured to receive and condition the detected signal to provide at least one conditioned signal; and

a bias control generator coupled to the conditioning unit and configured to receive the at least one conditioned signal and provide at least one bias control signal for adjusting a bias of at least one amplifier stage.

23.   A method for adjusting a bias of a multi-stage amplifier, comprising:

receiving and amplifying an input signal with one or more amplifier stages to provide an output signal;

detecting a level of the output signal;

conditioning a detected signal indicative of the detected output signal level to provide at least one conditioned signal;

forming at least one bias control signal based on the at least one conditioned signal; and

adjusting the bias of at least one amplifier stage with the at least one bias control signal.

24.   The method of claim 23, wherein the conditioning is performed with analog circuitry having a first transfer characteristic selected to provide a desired overall transfer characteristic for bias adjustment of the at least one amplifier stage.

25. The method of claim 23, wherein the conditioning is performed with digital circuitry configured to implement a first transfer characteristic selected to provide a desired overall transfer characteristic for bias adjustment of the at least one amplifier stage.